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ECONOMIC ASPECTS OF TECHNICAL AND SCIENTIFIC INFORMATION (REPORT TO THE MINISTER OF THE BUDGET ON THE MEETING HELD BY A WORK GROUP OF THE OCSE)

A. Simari

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ECONOMIC ASPECTS OF TECHNICAL AND SCIENTIFIC INFORMATION
(Report to the Minister of the Budget on the Meeting Held By a Work Group of the OCSE - Paris January 6, 1967)

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ABSTRACT: The author describes the work of an OCSE meeting, outlines its objectives, and discusses some of the economic aspects of technical and scientific information.

The purpose of the constitution of such a group is: /13*

a. to identify and establish within the systems of information elements and parameters which will permit the estimation of costs and profits (information efficiency). Such estimates are necessary for making valid decisions in the field of scientific and technical information and the organization thereof;

b. to develop uniform standards and rules, to allow significant confrontations and comparisons between the national information systems of different countries.

c. finally, to evaluate costs and profits, as well as the efficiency of the various procedures in process, in consideration of their functional elements and of the usefulness achieved.

It is obvious that such a study (which defines a level, in economic analysis, for the diffusion of information and its conveyance to decisive levels which are actively and potentially interested) is important.

Mr. W. T. Knox, of the Executive Office for Science and Technology of the United States, presided over the first meeting of this group which examined the following points:

1. analysis of literature on the subject;
2. study of total cost of information;
3. studies on cost/efficiency relationship;
4. application of methods of economic analysis.

I. LITERATURE ON THE SUBJECT

The preliminary analysis has revealed lack of literature on the subject.

*Numbers in the margin indicate pagination in the foreign text.

The need to identify and compile the existing bibliography and documentation, now and in the future, was stressed to members of the group.

II. STUDY ON THE TOTAL COST OF INFORMATION

1. Objectives:

With regard to the question of total cost of information, it was decided that the financial and labor resources employed in the scientific and technical information fields of OCSE countries should be identified and evaluated.

The writer pointed out the necessity of categorizing the investigation after identification of the specific anatomic and physiological characteristics of each of the areas. 14

For the sake of organization, consideration was given to classification according to economic categories or according to the different types of information.

2. Purposes:

The goals specified by the group are:

a. to make the governments aware and conscious of the importance of the resources which are actually invested in such an activity;

b. to participate in the collection of data when international annual statistics on research and development are available in each specific field;

c. to supply statistical data to the governments in order to assist in making decisions for the creation of an information policy and to anticipate future developments;

d. to suggest a general structure for the cost/profit (efficiency) ratio of the elements and functions of the existing systems of information.

The writer emphasized the necessity of implementing analysis within well defined and specific fields or functions, the definition of which will permit the characterization of the nature and substance of the information and thus its systematic coordination in a structure of national and community information policy.

3. Action:

The group decided to employ a capable organization to make a preliminary study of this problem. This organization, selected by the Secretariat, will submit to the group:

a. a detailed proposal of what it intends to study in the information field;

b. an outline of the methodology proposed for application.

III. STUDIES OF THE COST/EFFICIENCY RATIO

It has been decided to examine this problem:

a. with a specific analysis of the costs related to well-defined functions of the systems of information, such as abstract, summary and indexing services;

b. with a thorough study of the costs and benefits derived by the users, /15 in specific economic areas.

Studies in progress in the different countries will be used, and some of these eventually will be given a somewhat different orientation.

The Secretariat has been entrusted with the task of preparing a list for the next meeting, divided according to countries, showing studies executed, characteristic methods, common results, and their contribution to the cost/efficiency relation analysis.

Such works and studies will be used by the group as a basis for subsequent decisions on the jobs to be done and the methodology to be followed.

IV. APPLICATION OF THE METHODS OF ECONOMIC ANALYSIS

Mr. Colm, a Canadian, of the Science Secretariat of the Privy Council, commenting on the theme introduced during the discussion, gave a precise definition of information economy, then led a discussion to examine how and to what extent the methods used by economists could be utilized, particularly in studies related to information for measuring the component elements with the intention of determining cost/efficiency ratio.

V. NEXT MEETING

It was suggested that the next meeting be held in Oslo on March 31, 1967.

Contributions of the writer to the Work of the Group

During the course of activities, the writer's contributions stimulated discussion on the internal, comparative analysis of information systems. He indicated the need to specify that information is differentiated and examined differently in the cost/profit ratio, according to whether it refers, for example, to the field of didactic, scientific or technological research, to other fields, or to the areas and specific activities involved.

On the other hand, such analyses must be achieved on the basis of preliminary comparative investigations of administrative records and of the public and private buildings in which they take place.

Thus, functions and elements of different national information systems cannot be considered while assuming equal parameters of profits if the cost/profit (efficiency) ratio has not initially been differentiated and dissociated within the systems and within the areas or specific functions of information.

For certain countries, such as the United States, it is easy to see the difference between investments for didactic research on a higher level and investments for pure and technological research of the various administrative and accounting categories. These areas generally exhibit a greater difference here, whereas elsewhere they are intermingled, and it is not always clear which is investment and cost for higher didactic research and which, on the contrary, is investment and cost for basic, technological research. /16

Similarly, in the field of libraries, instrumental in the areas of technical, scientific, didactic or mass information, in our country and in the rest of Europe, with the exception of the Scandinavian countries and the United Kingdom, it is not easy to distinguish which are actually investments for scientific, technical, didactic and mass information, since most of the libraries operate simultaneously in areas involving all of these functions. This is why it would be necessary first to define, determine or establish a parameter for the cost/profit ratio, in order to separate the terms of the relationship between the various functions that develop simultaneously, for the purpose of an efficient and definite confrontation and comparison.

The writer also supported Dr. Freman in his discussion, on cost/profit as a basis for all economic evaluation. In the field of information, the first factor (the cost) is subject to a precise determination by the appropriate criteria; the other factor, the profit, is the object, of a subjective evaluation.

The author felt it necessary to emphasize that the principal effort of the group should be to find the best way to determine the quality-value in order to establish this factor as a parameter, and to introduce it in the second term of the cost/profit ratio. Such an objective determination of the terms and the relationship would make a greater knowledge possible.

On the other hand, the substitution of the profit term by the efficiency term does not simplify, but rather complicates the logic and functional aspect implied in the terms of the relation. In effect, the efficiency is exactly the result and the function of the ratio sought again between both terms (size) and cannot be given as the term proper.

He added that the task of analyzing the types, functions, areas, and elements of the information in each system or in reciprocal comparisons was a premise for attaining such results.

A valid information policy, however, does not imply that an alternative, quite valid information science should be ignored in regard to economic and output factors, namely: evaluations of the structural cost/profit ratio. This in turn must be comprehensively determined in the second term in order to provide a basis of knowledge and measurement. Such determination could be made possible [illegible] areas and [illegible] given

by analyzing appropriate specific areas and functions and the basis of given factors and criteria appropriate to each of them.

For example, in the analysis of mass, didactic information through the medium of libraries, the statistical factor of usage can easily be assumed to be a determined element of the profit (efficiency) of the cost/profit ratio. However, it would not be sufficient for highly technical and scientific information where the quantitative determination of the profit is more complex, or is not so readily ascertained, since it is a function of successful research that is dependent upon future profits and possibly unforeseen profits. In this case, a parameter could be established for the profit by considering concrete models and situations, or by analyzing the times and speeds of information, communication, and the capacity to reach the decisive targets, namely the dynamics and use of the means of conveying information.

Other points dealt with by the writer were:

a. that relating to the choice of the area of industrial patents for specific research, dealing with areas utilizing the field of technological information. The president has considered modifying this proposal into a recommendation to be made through the Secretariat of the OCSE to the International control of patents.

b. that relating to the political considerations under which an information system is operating when it is found that this system is incurring, in the technological and scientific field, excessive costs and decreasing profits which are increasingly negligible and inversely proportional when the common operation area and system range is reduced.

It is necessary, above all, to overcome traditional legal boundaries in the field of technical and scientific information.

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